

THE CLAIMS

What is claimed is:

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1. A method for evaluating particle concentrations in the atmosphere of a clean room or similar environment comprising:

exposing a test surface of a test substrate to the atmosphere for a test time to capture an amount of particles;

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analyzing the amount of captured particles; and

comparing the analyzed amount of particles with a reference amount of particles from a reference substrate to determine the particle concentration in the environment.

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2. The method of claim 1 which further comprises cleaning at least the test surface of the test substrate prior to exposing it to the atmosphere.

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3. The method of claim 1 which further comprises bonding the test surface that contains the captured particles to a surface of a second substrate after the test time to avoid loss of captured particles prior to the analyzing step.

4. The method of claim 3 wherein the second substrate is another test substrate.

5. The method of claim 4 which further comprises separating the test pair of substrates before conducting the analyzing.

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6. The method of claim 3 which further comprises abrading away at least one of the substrates before conducting the analyzing.

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7. The method of claim 1 wherein the capturing of the particles is accomplished by annealing the test substrate.

8. The method of claim 7 wherein the annealing is performed for about 1 to about 3 hours.

9. The method of claim 7 wherein the annealing is performed at a temperature of between about 800°C and about 1050°C.

10. The method of claim 1 wherein the analyzing of particle amounts comprises
5 evaluating an atomic concentration profile of the particles captured by the test substrate.

11. The method of claim 10 wherein the atomic concentration profile is determined by a Secondary Ion Mass Spectroscopy (SIMS) device.

10 12. The method of claim 10 wherein the atomic concentration profile is determined at the test surface of the test substrate.

13. The method of claim 12 wherein the test surface is analyzed over a thickness of about 100 to 500 nanometers.
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14. The method of claim 1 which further comprises producing a series of test substrates at predetermined intervals to periodically monitor the particle content of the environment.

20 15. The method of claim 13 wherein a test substrate is produced at intervals of about every 30 minutes.

16. The method of claim 1 which further comprises cleaning the reference substrate to provide an essentially particle-free reference.
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17. The method of claim 1 which further comprises bonding a reference surface of the reference substrate with a second reference surface of a second reference substrate to form a reference substrate pair.

30 18. The method of claim 17 which further comprises annealing the reference substrate pair.

19. The method of claim 18 wherein the reference substrate pair is annealed at an annealing temperature and for an annealing time that are essentially equal to those used for the test substrate.

5 20. The method of claim 1 which further comprises analyzing a particle concentration of the reference substrate.

21. The method of claim 20 wherein the analyzing of the particle concentration of the reference substrate is conducted in the same manner as that used for the test substrate.

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